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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,440	02/17/2004	Sumio Kawai	OOCL-152 (6MHA-03S0555P1)	6170

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EXAMINER	
AGGARWAL, YOGESH K	
ART UNIT	**PAPER NUMBER**
2622	

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08/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/780,440	KAWAI ET AL.	
	Examiner	Art Unit	
	Yogesh K. Aggarwal	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4,6,7,9,10 and 12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,6,7,9,10 and 12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *08/15/2005,,02/17/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Election/Restrictions

2. Applicant's election without traverse of claims 1, 2, 4, 6, 7, 9, 10 and 12 in the reply filed on 06/04/2007 is acknowledged.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 2, 4, 6, 7, 9, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo (JP Patent # 08-079633) in view of Atsuta (US Patent # 5,920,144).

[Claim 1]

Kondo teaches a camera (figures 1, 2 and 4) comprising a photographing optical system (lens 32), which forms an optical image of an object (Paragraphs 1, 11);

a photoelectric conversion element (CCD 36), which converts the optical image into an electric signal (Paragraph 10);

an optical element (LPF 35) arranged between the photographing optical system (32) and the photoelectric conversion element (See figure 2, Paragraph 12 teach low pass filter is attached to an open section 56); and

vibration means (piezoelectric element 60), which vibrates the optical element (35) at one of at least two frequencies and then at the other frequency (Paragraphs 12-15, figures 2 and 3),

Kondo fails to teach wherein vibration means that vibrates the optical element first at one of at least two frequencies and then at the other frequency said frequencies being close to resonance frequencies.

However, Atsuta teaches a vibration driven motor for an optical apparatus such as camera or the like (col. 1 lines 14-16) which are driven close to the resonance frequencies fo as shown in figure 3 (col. 6 lines 8-36, figure 3). Atsuta teaches that the speed of vibrating motor abruptly increases when it is vibrated close to resonance frequency fo and decreases rapidly when the frequency is decreased less than resonant frequency. Therefore to have a stable speed of the vibrating motor it is necessary to precisely detect the state of vibration in the vicinity of resonance frequency and to control the AC voltages applied to the vibrator based on the result of the detection (col. 3 lines 8-36).

Therefore taking the combined teachings of Kondo and Atsuta, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have vibrated the optical means of Kondo at a plurality of frequencies close to resonant frequency as taught in Atsuta in order to have a stable speed of the vibrating motor by precisely detecting the state of vibration in the vicinity of resonance frequency and to control the AC voltages applied to the vibrator based on the result of the detection as taught in Atsuta (col. 3 lines 8-36).

[Claim 2]

Kondo discloses in figure 3 wherein the vibration means vibrates the optical element first at a low-order frequency and then at a high-order frequency (Paragraph 15, 10 Hz-10kHz).

[Claim 4]

Kondo teaches a camera (figures 1, 2 and 4) comprising a photographing optical system (lens 32), which forms an optical image of an object (Paragraphs 1 and 11);

an imaging element (CCD 36), which converts the optical image into an electric signal (Paragraph 10);

a dust filter (LPF 35) arranged between the photographing optical system and the imaging element (See figure 2, Paragraph 12 teach low pass filter is attached to an open section 56);

a piezoelectric element (60) which vibrates the dust filter; a drive circuit (62) which drives the piezoelectric element (Paragraph 13); and

a control circuit (68) which outputs control signals for driving and controlling the drive circuit (62), wherein the control circuit first outputs a control signal for causing the dust filter to undergo a low-order vibration and then a control signal for causing the dust filter to undergo a high-order vibration (Paragraphs 13-15, figure 3).

Kondo fails to teach wherein vibration means that vibrates the optical element first at one of at least two frequencies and then at the other frequency, said frequencies being resonance frequencies.

However, Atsuta teaches a vibration driven motor for an optical apparatus such as camera or the like (col. 1 lines 14-16). Atsuta also teaches that the vibration motor is first driven at a first resonance and then at a second resonance frequency (col. 5 lines 6-17) in order to have higher stiffness in the first vibration node than in the second vibration node as taught in Atsuta (col. 5

lines 6-17) thereby having higher stiffness to weight ratio compared to prior art leading to decrease in the weight of the overall equipment.

Therefore taking the combined teachings of Kondo and Atsuta, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have vibrated the optical means of Kondo at a plurality of resonant frequencies as taught in Atsuta in order to have higher stiffness in the first vibration node than in the second vibration node as taught in Atsuta (col. 5 lines 6-17) thereby having higher stiffness to weight ratio compared to prior art leading to decrease in the weight of the overall equipment.

[Claim 6]

Kondo teaches in figure 3 wherein the low-order vibration is primary vibration having one node, and the high-order vibration is secondary vibration having two nodes. Atsuta teaches resonance frequencies (col. 3 lines 8-36)

[Claim 7]

See Examiner's notes regarding rejection of claim 6.

[Claim 9]

Kondo teaches a camera (figures 1, 2 and 4) comprising a photographing optical system (lens 32), which forms an optical image of an object (Paragraphs 1, 11);

imaging means (CCD 36), which converts the optical image into an electric signal (Paragraph 10);

an optical element (LPF 35) arranged between the photographing optical system (32) and the imaging means (See figure 2, Paragraph 12 teach low pass filter is attached to an open section 56); and

vibration means (piezoelectric element 60), which vibrates the optical element (35) (Paragraphs 12-15, figures 2 and 3),

wherein vibration means (60) vibrates the optical element (35) such that the number of vibration nodes changes with time (Paragraph 15, 10 Hz-10kHz)

Kondo fails to teach wherein vibration means that vibrate the optical element to undergo a standing wave vibration. However Atsuta teaches that vibrator 1 of the vibrating motor is vibrated such that a standing wave is generated when vibrated at a first higher order and then at a lower resonant frequency standing wave (col. 5 lines 6-15) in order to have higher stiffness in the first vibration node than in the second vibration node thereby having higher stiffness to weight ratio compared to prior art leading to decrease in the weight of the overall equipment.

Therefore taking the combined teachings of Kondo and Atsuta, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have vibrated the optical element to undergo a standing wave vibration in order to have higher stiffness in the first vibration node than in the second vibration node as taught in Atsuta (col. 5 lines 14-17) thereby having higher stiffness to weight ratio compared to prior art leading to decrease in the weight of the overall equipment.

[Claim 10]

Kondo teaches wherein vibration means vibrates the optical element such that the number of vibration nodes increases with time (Paragraph 15, 10 Hz-10kHz).

[Claim 12]

Kondo teaches a camera in which an optical image or an object is formed on a light-receiving surface of an imaging element (CCD 36), via a photographing optical system (lens 32), wherein

a dust filter (LPF 35) is arranged in front of the imaging element (See figure 2), the dust filter is vibrated, sequentially at frequencies, thereby to remove dust and the like from a surface of the dust filter (Paragraphs 13-15, figure 3).

Kondo fails to teach wherein vibration means that vibrates the optical element first at one of at least two frequencies and then at the other frequency said frequencies being close to resonance frequencies.

However, Atsuta teaches a vibration driven motor for an optical apparatus such as camera or the like (col. 1 lines 14-16) which are driven close to the resonance frequencies fo as shown in figure 3 (col. 6 lines 8-36, figure 3). Atsuta teaches that the speed of vibrating motor abruptly increases when it is vibrated close to resonance frequency fo and decreases rapidly when the frequency is decreased less than resonant frequency. Therefore to have a stable speed of the vibrating motor it is necessary to precisely detect the state of vibration in the vicinity of resonance frequency and to control the AC voltages applied to the vibrator based on the result of the detection (col. 3 lines 8-36).

Therefore taking the combined teachings of Kondo and Atsuta, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have vibrated the optical means of Kondo at a plurality of frequencies close to resonant frequency as taught in Atsuta in order to have a stable speed of the vibrating motor by precisely detecting the state of vibration in the vicinity of resonance frequency and to control the AC voltages applied to the vibrator based on the result of the detection as taught in Atsuta (col. 3 lines 8-36).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yogesh K. Aggarwal whose telephone number is (571) 272-7360. The examiner can normally be reached on M-F 9:00AM-5:30PM.

5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on (571)-272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

6. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

YKA
August 4, 2007